

Exhibit 2

**UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

ECOFACTOR, INC.,

Plaintiff,

v.

GOOGLE LLC,

Defendant.

Case No. 6:20-cv-00075-ADA

JURY TRIAL DEMANDED

ECOFACTOR, INC.,

Plaintiff,

v.

ECOBEE, INC.,

Defendant.

Case No. 6:20-cv-00078-ADA

JURY TRIAL DEMANDED

ECOFACTOR, INC.,

Plaintiff,

v.

VIVINT, INC.,

Defendant.

Case No. 6:20-cv-00080-ADA

JURY TRIAL DEMANDED

DEFENDANTS' FINAL INVALIDITY CONTENTIONS

I. INTRODUCTION

Pursuant to the July 16, 2020 Scheduling Orders in their respective cases,¹ Defendants

¹ D.I. 33, Case No. 6:20-cv-00075-ADA; D.I. 27, Case No. 6:20-cv-00078-ADA; D.I. 27, Case No. 6:20-cv-00080-ADA.

Google LLC (“Google”); ecobee, Inc. (“ecobee”); and Vivint, Inc. (“Vivint”) (collectively “Defendants”) provide these Final Invalidity Contentions to Plaintiff EcoFactor, Inc. (“EcoFactor”) for the following patents (“Asserted Patents”) and claims (“Asserted Claims”) identified as asserted in EcoFactor’s Preliminary Disclosure of Asserted Claims and Infringement Contentions to Google served on June 19, 2020 (“Infringement Contentions”)²:

- U.S. Patent No. 8,180,492 (“492 Patent”) – Claims 1-4, 6-13, 15-18 (“492 Asserted Claims”)
- U.S. Patent No. 8,412,488 (“488 Patent”) – Claims 1-16 (“488 Asserted Claims”)
- U.S. Patent No. 8,738,327 (“327 Patent”) – Claims 1-19 (“327 Asserted Claims”)
- U.S. Patent No. 10,534,382 (“382 Patent”) – Claims 1-20 (“382 Asserted Claims”)

Defendants address the invalidity of the Asserted Claims and conclude with a description of their document productions and identification of additional reservations and explanations. Each Defendant is entitled to its own trial, and nothing in these contentions limits any particular Defendant’s right to select defenses for trial.

II. PERSON HAVING ORDINARY SKILL IN THE ART

These Final Invalidity Contentions use the acronym “POSITA” to refer to a person having ordinary skill in the art to which the claimed inventions pertain. A POSITA at the time of the alleged invention of the asserted patents would have had a (1) Bachelor’s degree in engineering, computer science, or a comparable field of study, and (2) at least five years of (i) professional experience in building energy management and controls, or (ii) relevant industry experience. Additional relevant industry experience may compensate for lack of formal

² Based on EcoFactor’s assertions, the Asserted Patents are governed by the pre-AIA statutory framework, as the applications were filed before March 16, 2013. Defendants reserve the right to dispute the effective filing dates of the Asserted Patents, and whether they are governed by the pre- or post-AIA statutory framework. Defendants also reserve the right to challenge the sufficiency of the Plaintiff’s infringement contentions.

education or vice versa.³

III. PRIORITY DATE OF THE ASSERTED PATENTS AND CLAIMS

EcoFactor asserts the following priority dates for all Asserted Claims in its June 19, 2020 Infringement Contentions:

- '492 Priority Date: July 14, 2008
- '488 Priority Date: August 3, 2007
- '327 Priority Date: August 3, 2007
- '382 Priority Date: July 14, 2008

It is EcoFactor's burden to show entitlement to its asserted priority dates, and Defendants maintain that EcoFactor fails to meet that burden. EcoFactor has not alleged, or produced any evidence to support, earlier dates of conception and actual reduction to practice.

As examples, provisional application No. 60/963,183 fails to disclose all elements of the '488 and '327 Asserted Claims. As another example, the '382 patent is not entitled to claim the benefit of the filing date of any previously filed application in its family, because those previously filed applications do not provide written description support under § 112 for the "historical values" limitations. As another example, the '492 patent is not entitled to claim the benefit of the filing date of any previously filed application in its family, because those previously filed applications do not provide written description support under § 112 for the limitations relating to storing at least a first HVAC temperature setpoint associated with a structure that is deemed to be non-occupied and at least a second HVAC temperature setpoint associated with said structure deemed to be occupied.

Finally, as described below, elements of the Asserted Claims lack written description and

³ Defendants reserve the right to amend or modify this based on Plaintiff's positions.

enablement support, and those Asserted Claims therefore cannot claim priority to earlier continuation applications on the face of the Asserted Patents. For purposes of these Final Invalidity Contentions, Defendants identify art that qualifies as prior art under 35 U.S.C. § 102 (pre-AIA) on or before EcoFactor's asserted priority dates above for the respective Asserted Patents.

IV. OVERVIEW OF DEFENDANTS' INVALIDITY CONTENTIONS

The grounds for invalidity under 35 U.S.C. §§ 101, 102, 103, and 112, respectively, are set forth below in Sections V through VIII. With regard to prior art invalidating the asserted claims under 35 U.S.C. §§ 102 and 103, Defendants include here charts contained in Exhibits A and B. The charts disclosed in Exhibit A (A-1 through A-31) demonstrate, on a claim-by-claim basis how individual prior art publications or systems disclose the limitations of the asserted claims. The charts disclosed in Exhibit B (B-1 through B-39) are each specific to a limitation in one or more of the asserted claims. The references in Exhibits A and B may disclose elements of the Asserted Claims explicitly or inherently. The references in Exhibits A and B may also be relied upon to show the state of the art at the relevant time and/or that elements of the Asserted Claims, or any Asserted Claim as a whole, would have been obvious to a person having ordinary skill in the art at the time of the alleged invention. Obviousness combinations drawn from Exhibit B are provided in the alternative to Defendants' anticipation contentions and are not to be construed as suggesting that any reference included in the combinations is not by itself anticipatory. Defendants are currently unaware of the extent, if any, to which EcoFactor will contend that limitations of the Asserted Claims are not disclosed in the art identified by Defendants as anticipatory. To the extent that an issue arises with respect to any such limitation, Defendants reserve the right to identify other references and combinations that may make obvious the addition of the allegedly missing limitation, including those references identified in

Exhibit B as disclosing specific claim limitations.

Moreover, depending on EcoFactor’s proposed claim constructions, various references discussed in Exhibits A and B may be of greater or lesser relevance, and different combinations of these references may be implicated. In view of Defendants’ uncertainty regarding how EcoFactor will contend the claims apply, the discussion of the different references in Exhibits A and B may reflect alternative applications of the prior art against the Asserted Claims. As such, the comments on one item of prior art in one of the charts in Exhibits A or B should not be construed as necessarily applying to any of the other charts or prior art discussed in Exhibits A or B. Defendants provide pinpoint citations to exemplary portions of the prior art for the purpose of fairly disclosing the manner in which the prior art references meet the claim limitations. Such citations, however, should not be construed to mean that other portions of the prior art references are not relevant to the invalidity of the claims. Defendants specifically reserve the right to rely on the entirety of any or all of the prior art references—whether charted or not charted—as a basis for asserting invalidity of the Asserted Claims and/or as necessary to supplement its Invalidity Contentions with additional citations and evidence.

Defendants incorporate by reference in these Final Invalidity Contentions, in full, the following Petitions for *inter partes* review (“IPR”) of the Asserted Patents: *Google LLC v. Ecofactor, Inc*, IPR2021-00054, Paper 2 (PTAB Oct. 22, 2020); *Google LLC v. Ecofactor, Inc*, IPR2021-00488, Paper 2 (PTAB Jan. 30, 2021); *Google LLC v. Ecofactor, Inc*, IPR2021-00454, Paper 2 (PTAB Jan. 22, 2021); *Google LLC v. Ecofactor, Inc*, IPR2021-00409, Paper 2 (PTAB Jan. 11, 2021). Defendants also incorporate by reference the records, in full, of each of the above IPR proceedings, including all exhibits of each above IPR Petition.

A. ANTICIPATION

Based on Defendants’ understanding of EcoFactor’s Infringement Contentions, at least

one or more Asserted Claims are invalid as anticipated under 35 U.S.C. § 102 in view of the prior art references identified and discussed in Exhibit A, as well as any methods or systems that embody the concepts disclosed in those references. Exhibit A is a series of charts, numbered A-1 through A-31, that identifies specific examples of where each claim limitation is found in a particular reference.

Table of Reference-Specific Charts

Chart	Reference (Short Name)	Asserted Patent
A-1	Chapman	'492
A-2	Boman	'492
A-3	Coon	'492
A-4	Oswald '734	'492
A-5	Reed	'492
A-6	Ehlers '330	'488
A-7	Jayadev	'488
A-8	Cler	'488
A-9	Oswald '734	'488
A-10	Ota	'488
A-11	Hildebrand	'488
A-12	Arens	'488
A-13	WebCTRL	'488
A-14	Piette	'488
A-15	Ehlers '330	'327
A-16	Oswald '645	'327
A-17	Arens	'327
A-18	Ota	'327
A-19	WebCTRL	'327
A-20	Pierret	'327
A-21	Arens	'382
A-22	Ehlers '330	'382
A-23	Oswald '645	'382
A-24	Oswald '734	'382
A-25	Rhee	'382
A-26	WebCTRL	'382
A-27	Gadelmann	'382
A-28	Shankar	'382
A-29	Reed	'382
A-30	Quam	'382
A-31	Mortensen	'488

Defendants further intend to rely on inventor admissions concerning the scope of the prior art relevant to the Asserted Claims found in, among other things: the patent prosecution history for the asserted patents, related patents, and/or related patent applications; any deposition testimony of the named inventors; and the papers filed and any evidence submitted by EcoFactor in conjunction with this litigation or related litigations (e.g., ITC Inv. No. 337-TA-1185), subject to any applicable protective orders.

Moreover, these cases have only recently begun, discovery is ongoing, and Defendants' prior art investigation and third-party discovery are therefore not yet complete. Defendants reserve the right to present additional items of prior art under 35 U.S.C. §§ 102 and/or 103 located during the course of discovery or further investigation.

B. OBVIOUSNESS

Prior art references that invalidate the Asserted Patents are outlined below and listed in Exhibits A and B. These prior art references evidence teachings, suggestions, motivations, and/or other reasons to combine various ones thereof in ways that render obvious all of the Asserted Claims. Certain references within Exhibit B are grouped or categorized according to a particular claim limitation that is disclosed within each reference. References from within a group share similar reasons as to why they would have been well within the level of ordinary skill in the art and obvious to combine with prior art listed in Exhibits A with other references in Exhibit B. Thus, in addition to the specific combinations of prior art disclosed using claim charts, Defendants reserve the right to rely on any combination of prior art references disclosed herein.

Based on Defendants' understanding of EcoFactor's Infringement Contentions, Defendants believe that the references discussed in Exhibits A-1 through A-31 each anticipate one or more of the Asserted Claims. However, if the finder of fact determines that some

limitation of a given claim was not disclosed by the asserted reference, Defendants contend that the charted reference in combination with the knowledge and skill of a person of ordinary skill in the art at the time of the alleged invention and/or in combination with the disclosures of other prior art would have rendered all of the Asserted Claims obvious.

The Supreme Court has held that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1739 (2007). When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. *Id.* at 1740. No showing of a specific motivation to combine prior art is therefore required to combine the references disclosed in Exhibits A and B or otherwise discussed herein, as each combination of art would have yielded expected or predictable results and at most would simply represent a known alternative to one of skill in the art. *See id.* at 1739-40 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, and instead applying an "expansive and flexible" approach); *see also Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1058 (Fed. Cir. 2016); *Intercontinental Great Brands LLC v. Kellogg N. Am. Co.*, 869 F.3d 1336, 1344 (Fed. Cir. 2017). Indeed, the Supreme Court held that a POSITA is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *KSR*, 127 S. Ct. at 1742. Nevertheless, in addition to the information contained in the section immediately above and elsewhere in these contentions, Defendants hereby identify additional motivations and reasons to combine.

One or more combinations of the prior art references identified above would have been obvious because these references would have been combined using: known methods to yield

predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. *See Apple*, 839 F.3d at 1077; *Intercontinental Great Brands*, 869 F.3d at 1344. In addition, it would have been obvious to try combining the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. *See ACCO Brands Corp. v. Fellowes, Inc.*, 813 F.3d 1361, 1367 (Fed. Cir. 2016); *Sanofi-Aventis Deutschland GmbH v. Glenmark Pharms. Inc., USA*, 748 F.3d 1354, 1360 (Fed. Cir. 2014); *Bayer Pharma AG v. Watson Labs., Inc.*, 874 F.3d 1316, 1329 (Fed. Cir. 2017); *KSR*, 127 S. Ct. at 1742. Further, the combinations of the prior art references identified above and in the claim charts would have been obvious because the combinations represent known potential options with a reasonable expectation of success. *See InTouch Techs., Inc. v. VGo Commc'ns, Inc.*, 751 F.3d 1327, 1347 (Fed. Cir. 2014).

Additional evidence that there would have been a motivation to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the Asserted Claims; the existence of a known need or problem in the field of the endeavor at the time of the alleged inventions; and the background knowledge that would have been possessed by a POSITA. *See Arctic Cat Inc. v. Bombardier Recreational Prod. Inc.*, 876 F.3d 1350, 1359 (Fed. Cir. 2017); *Intercontinental Great Brands*, 869 F.3d at 1344; *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1003 (Fed. Cir. 2016); *Norgren Inc. v. Int'l Trade Comm'n*, 699 F.3d 1317,

1322-23 (Fed. Cir. 2012).

The motivation to combine the teachings of the prior art references disclosed herein is also found in the references themselves and in: (1) the nature of the problem being solved; (2) the express, implied and inherent teachings of the prior art; (3) the knowledge of POSITAs; (4) the predictable results obtained in combining the different elements of the prior art; (5) the predictable results obtained in simple substitution of one known element for another; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces. *See* above legal background regarding obviousness combinations and M.P.E.P. § 2143.

1. General State of the Art and Combinations

In addition to the discussion above, and to the extent not anticipated, the Asserted Claims are invalid under 35 U.S.C. § 103 as being obvious to a person having ordinary skill in the art of the relevant technology. Items of prior art that render obvious the asserted claims, as well as exemplary secondary references and obviousness combinations, are cited and described in attached claim charts Exhibits A-1 to A-31 and B-1 to B-39. In the event a particular primary reference identified in the claim charts does not anticipate one of the asserted claims, the reference, alone or in combination with one or more of the exemplary secondary references identified in any of those charts would render the claim obvious. The identification of certain combinations of prior art does not exclude other combinations and is without prejudice to

Defendants' right to rely on additional specific combinations as well as to detail and explain such combinations.

Based on all of these considerations, as further detailed in Exhibits A-1 to A-31 and B-1 to B-39, a POSITA would have combined the teachings of the prior art references discussed and charted there. The combinations of these references would have rendered obvious to one of ordinary skill in the art the subject matter of the Asserted Claims. The references identified in Exhibits A-1 to A-31 and B-1 to B-39 are analogous prior art to the subject matter of the Asserted Claims and, for at least the reasons set forth below, are properly combinable. Because these prior art references exist within a single field of art, particularly one in which individuals in the field often shared and/or collaborated on their work, it would have been obvious for a person of skill in the art to look from one piece of prior art to another in order to find any missing functionality they desired to implement. Therefore, these references provide interrelated teachings, and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the asserted patents. It would have been within the ability of a POSITA to combine any of the references identified in Exhibits A-1 to A-31 and B-1 to B-39. A POSITA would have had a reasonable expectation of success in combining any of the references identified in Exhibits A-1 to A-31 and B-1 to B-39 because they involve only the predictable use of prior art elements according to their established functions.

In addition, it would have been obvious to combine any of the prior art in Exhibits A-1 to A-31 and B-1 to B-39 because all of these references relate to devices and methods of using well-known methods to model, control, and/or interact with HVAC systems, or otherwise relate to the field of energy management in a house or other structure, as well as other

limitations disclosed in the asserted claims, in routine and predictable ways. Indeed, in discussing the state of the art for “household energy management” at the relevant time, U.S. Patent App. No. 2005/0171645 (“Oswald ’645”) expressly notes “[t]here have been a number of patents in this field in recent years, which describe new hardware solutions to achieving a computer/Internet-controlled house and provide improved control of the energy consumption in the household.” Oswald ’645 ¶ 4. Oswald ’645 goes on to cite a number of related patents and/or patent applications widely known in the art at the time, including U.S. Patent No. 5,572,438 by Ehlers, U.S. Patent Appl. Pub. No. 2003/0050737 by Osann, U.S. Patent No. 5,115,967, U.S. Patent No. 6,324,008, U.S. Patent Appl. Pub. No. 2002/0095269, as well as the work of third parties including Microchip Technology Inc. and their relevant publications. *See id.* at ¶¶ 5-11. Each of these references relates to the same general field as the asserted patents and further confirms the proliferation of related prior art known to those of skill in the art at the relevant time.

One of ordinary skill in the art at the relevant time would have similarly been familiar with any number of techniques and approaches to energy demand management and related systems and methods. For example, the term demand-side management originated “following the time for the 1973 energy crisis and 1979 energy crisis.” *See Energy demand management, Wikipedia, https://en.wikipedia.org/wiki/Energy_demand_management.* By the relevant priority dates for the asserted patents, a POSITA would have been familiar with any number of prior art systems associated with demand-side management of a structure and the related systems for efficiently implementing such systems. For example, U.S. Patent No. 6,480,803 (“Pierret”) notes, “[c]urrently, some utilities are employing a load shedding system to reduce the power demands during peak power consumption periods. When the customers’ demand for

energy reaches a given high level, a utility company that utilizes a load shedding program will send a message to specially equipped thermostats located in specific consumer facilities instructing the thermostat to adjust the preset temperature setting by a fixed number of degrees to reduce the power consumption, and thus the load upon the utility during a given period of time when the demand is expected to be exceptionally high.” Pierret at 1:15-25. Pierret notes there are “many” known prior art systems relating to this field of art. *Id.* at 1:26-27.

Moreover, as noted in “The Application of Wireless Sensor Networks to Residential Energy Efficiency and Demand Response” by Ota (“Ota”), there were at the relevant time a “variety of strategies” known for “utilizing distributed environmental sensing in residential HVAC control.” Ota at 68. Indeed, Ota notes that “[t]his chapter presents seven non-learning, load-shedding control strategies for residential HVAC systems that are inspired by (Lin, Federspiel et al. 2002).” *Id.* It would have been obvious to a POSITA to combine the teachings of any one of the references disclosed in Exhibits A and B because, *inter alia*, they concern the predictable use of prior art elements according to their established functions—all of which relate to the same general fields as the asserted patents.

As an additional example, and without limitation, it would have been obvious to a POSITA to combine the teachings of U.S. Patent Appl. Pub. No. 2004/0117330 (“Ehlers ’330”) with U.S. Patent No. 6,789,739 (“Rosen”). Ehlers ’330 and Rosen are in the same field of endeavor. A POSITA would be motivated to add the outdoor temperature sensor disclosed by Rosen to improve the operation of Ehlers ’330’s HVAC control system by including the ability to receive and apply local weather information. It would have been within the ability of a POSITA to combine them. A POSITA would have had a reasonable expectation of success

combining Ehlers '330 with Rosen because it only involves the predictable use of prior art elements according to their established functions.

As another example, and without limitation, it would have been obvious to a POSITA to combine the teachings of Oswald '645 with Rosen. Oswald '645 and Rosen are in the same field of endeavor. A POSITA would be motivated to add the techniques for looking up weather data using the Internet disclosed by Rosen to implement Oswald '645's teaching of using the Internet to obtain local weather information. It would have been within the ability of a POSITA to combine them. A POSITA would have had a reasonable expectation of success combining Oswald '645 with Rosen because it only involves the predictable use of prior art elements according to their established functions.

As another example, and without limitation, it would have been obvious to a POSITA to combine the teachings of U.S. Patent No. 4,897,798 ("Cler") with Rosen. Cler and Rosen are in the same field of endeavor. A POSITA would be motivated to add the techniques for looking up weather data using the Internet disclosed by Rosen to implement Cler's teaching of using outside temperature information. It would have been within the ability of a POSITA to combine them. A POSITA would have had a reasonable expectation of success combining Cler with Rosen because it only involves the predictable use of prior art elements according to their established functions.

Exhibit B lists B-1 through B-39—one for each category of obvious elements identified below. Based on Defendants' understanding of EcoFactor's Infringement Contentions, each list in Exhibit B identifies specific pinpoint citations exemplifying where the particular limitation can be found in the prior art references within each list.

Table of Limitation-Specific Charts

Chart	Representative Limitation	Asserted Patents
B-1	“storing at least a first HVAC temperature setpoint associated with a structure that is deemed to be non-occupied and at least a second HVAC temperature setpoint associated with said structure deemed to be occupied”	'492
B-2	“determining whether one or more networked electronic devices inside said structure are in use, wherein said networked electronic devices comprise a graphic user interface comprising a display, wherein said networked electronic devices receive input from one or more users and wherein use of said networked electronic devices comprises at least one of cursor movement, keystrokes or other user interface actions intended to alter a state of one or more of said networked electronic devices by one or more users”	'492
B-3	“determining that said one or more users has previously indicated a preference that said user's input be obtained before automatically changing said first HVAC temperature setpoint to said second HVAC temperature setpoint indicating that said structure is deemed to be occupied”	'492
B-4	“prompting said one or more users based on said determining that said one or more of said user's input should be obtained, wherein said prompting sends a message to at least one of said networked electronic devices that said first HVAC system is set for a non-occupied structure and whether to change said first HVAC temperature setpoint to said second HVAC temperature setpoint associated with occupancy of said structure”	'492
B-5	“in response to said prompting, receiving input from said one or more users to keep said first HVAC temperature setpoint”	'492
B-6	“keeping said first HVAC temperature setpoint based upon said input from said one or more users”	'492
B-7	“in which at least one of said networked electronic devices is a television”	'492
B-8	“The method of claim 1 in which at least one of said networked electronic devices is a personal computer.”	'492
B-9	“The method of claim 1 in which at least one of said networked electronic devices is connected to the Internet”	'492
B-10	“The method of claim 1 in which at least one of said networked electronic devices is a game console.”	'492
B-11	“further comprising adjusting said temperature setpoint with a remote computer”	'492
B-12	“in which said first HVAC temperature setpoint is varied automatically based on said input from said one or more users”	'492
B-13	“further comprising a remote computer that varies said first temperature setpoint.”	'492
B-14	“receiving temperature measurements from at least one HVAC control system associated with a first structure conditioned by at least one	'488

Chart	Representative Limitation	Asserted Patents
	“HVAC system”	
B-15	“one or more processors that receive measurements of outside temperatures from at least one source other than said HVAC system”	'488, '327
B-16	“wherein said one or more processors compares the inside temperature of said first structure and the outside temperature over time to derive an estimation for the rate of change in inside temperature of said first structure in response to outside temperature, and wherein said one or more processors compare an inside temperature recorded inside the first structure with said estimation for the rate of change in inside temperature of said first structure to determine whether the first HVAC system is on or off”	'488
B-17	“in which said one or more processors receive measurements of outside temperatures for geographic regions such as ZIP codes from sources other than said HVAC system”	'488, '327
B-18	“in which said HVAC system is located within a single family dwelling”	'488
B-19	“in which said HVAC system comprises a programmable thermostat”	'488
B-20	“in which said HVAC system comprises a programmable thermostat that communicates with a mesh networking protocol”	'488, '327
B-21	“[a] system as in claim 1 in which said HVAC system comprises a programmable thermostat that communicates with a network”	'488
B-22	“[a] system as in claim 1 in which said one or more processors communicate with said HVAC system using a network that includes an electricity meter”	'488
B-23	“[a] system as in claim 1 in which said estimation is a prediction about the future rate of change in temperature inside said structure”	'488, '327
B-24	“wherein the second setting is based on an agreement between a homeowner and a demand reduction aggregator”	'327
B-25	“the one or more processors with circuitry and code designed to execute instructions to determine whether the building is occupied or unoccupied, and based on that determination, to control the HVAC system to provide heating or cooling to the building at an operational temperature”	'382
B-26	“wherein the memory is configured to store historical values of the first data and second data”	'382
B-27	“the first processor with circuitry and code designed to execute instructions to communicate with the memory”	'382
B-28	“wherein the one or more processors with circuitry and code designed to execute instructions queries the user to confirm whether to change to a different temperature setpoint after determining whether the building is occupied or unoccupied”	'382
B-29	“wherein the at least one setting of the HVAC system comprises whether the HVAC system is operating in a cooling mode or a heating mode”	'382
B-30	“wherein the determination of whether the building is occupied or unoccupied by the one or more processors is based on a third data received from a motion sensor”	'382

Chart	Representative Limitation	Asserted Patents
B-31	“wherein the network connection is based on the IEEE 802.11 wireless protocol”	'382
B-32	“wherein the interface is configured to allow the user to turn the HVAC system on or off”	'382
B-33	“wherein the interface is configured to allow the user to input that the building is currently unoccupied”	'382
B-34	“the one or more processors with circuitry and code designed to execute instructions to receive a second data from a network connection, wherein the second data from the network connection is collected from a source external to the building and comprises outdoor temperature, wherein the second data from the network connection is received via the Internet”	'382
B-35	“wherein the at least one setting of the HVAC system comprises whether the HVAC system is currently on or off”	'382
B-36	“wherein the first data from the at least one sensor is provided by a sensor that is not electrically connected to the first processor”	'382
B-37	“one or more servers located remotely from the structure, the one or more servers configured to receive measurements of outside temperatures from at least one source other than the HVAC system”	'327
B-38	“compares the inside temperatures of the structure and the outside temperatures over time to derive an estimation for the rate of change in inside temperature of the structure in response to outside temperature”	'327
B-39	“wherein the memory is configured to store historical values of the first data and second data”	'382

2. Secondary Considerations

Secondary considerations of non-obviousness, or objective indicia of non-obviousness, “can include copying, long felt but unsolved need, failure of others, commercial success, unexpected results created by the claimed invention, unexpected properties of the claimed invention, licenses showing industry respect for the invention, awards or other industry praise for the invention, and skepticism of skilled artisans before the invention.” *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 711 F.3d 1348, 1368 (Fed. Cir. 2013). “A nexus between the merits of the claimed invention and evidence of secondary considerations is required in order for the evidence to be given substantial weight in an obviousness decision.” *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed. Cir. 2000). Moreover, even if a nexus exists,

secondary considerations of non-obviousness “simply cannot overcome [a] strong *prima facie* showing of obviousness.” *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1368 (Fed. Cir. 2008).

Plaintiff has not established the existence of any objective indicia of non-obviousness or secondary considerations. Defendants reserve the right to supplement their contentions to respond to any such evidence or arguments regarding secondary considerations.

V. INVALIDITY UNDER 35 U.S.C. § 101

To be patentable subject matter under § 101, a claim must be directed to one of four eligible subject matter categories: “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101. “Claims that fall within one of the four subject matter categories may nevertheless be ineligible if they encompass laws of nature, physical phenomena, or abstract ideas.” *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980). The Supreme Court established a two-step test for deciding the subject matter eligibility of claims under § 101. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). First, the claims must be analyzed to determine whether they are drawn to one of the statutory exceptions. *Id.* Claims that invoke generic computer components instead of reciting specific improvements in computer capabilities are abstract under this first step. *See Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335-36 (Fed. Cir. 2016). Second, the elements of the claims must be viewed both individually and as an ordered combination to see if there is an “inventive concept.” *Id.* The mere fact that a claim recites or implies that an abstract idea is implemented using a general-purpose computer does not supply an inventive concept necessary to satisfy § 101. *See Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1355 (Fed. Cir. 2016); *Alice*, 134 S. Ct. at 2357-59.

All of the Asserted Claims are directed to ineligible subject matter under 35 U.S.C. § 101 and applicable case law authority.⁴ Pursuant to the Court's guidance, Defendants will present any § 101 motions at the appropriate time.

VI. '492 PATENT

A. PRIOR ART REFERENCES

Defendants identify the following prior art now known to Defendants to anticipate or render obvious the '492 Asserted Claims under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g), and/or § 103, either expressly or inherently as understood by a POSITA.

1. Prior Art Publications

The following patents and publications are prior art to the '492 Asserted Claims under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). Invalidity claim charts for these references are attached as Exhibits A and B.

1. U.S. Patent No. 7,469,550 ("Chapman").

⁴ See, e.g., *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289 (2012); *Trading Techs. Int'l, Inc. v. IBG, LLC*, 921 F.3d 1084 (Fed. Cir. 2019); *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759 (Fed. Cir. 2019); *SAP America, Inc. v. InvestPic, LLC*, 898 F.3d 1161 (Fed. Cir. 2018); *Interval Licensing LLC v. AOL, Inc.*, 896 F.3d 1335 (Fed. Cir. 2018); *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121 (Fed. Cir. 2018); *Two-Way Media Ltd. v. Comcast Cable Commc'nns, LLC*, 874 F.3d 1329 (Fed. Cir. 2017), cert. denied, 139 S. Ct. 378 (2018); *Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332 (Fed. Cir. 2017); *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229 (Fed. Cir. 2016); *Affinity Labs of Texas, LLC v. DIRECTV, LLC*, 838 F.3d 1253 (Fed. Cir. 2016); *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016); *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369 (Fed. Cir. 2016); *Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363 (Fed. Cir. 2015); *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343 (Fed. Cir. 2015); *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359 (Fed. Cir. 2015); *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343 (Fed. Cir. 2014); *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014); *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350 (Fed. Cir. 2014); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014); *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366 (Fed. Cir. 2011).

2. Energy Savings and Added Customer Value in Intelligent Buildings (1998) (“Boman”)
3. U.S. Patent Appl. Pub. No. 2002/0147006A1 (“Coon”)
4. U.S. Patent No. 7,778,734 (“Oswald ’734”)
5. U.S. Patent No. 8,063,775 (“Reed”)
6. U.S. 8,196,185 (“Gadelmann”)
7. U.S. Patent Appl. Pub. No. 2008/0281472 (“Podgorny”)
8. U.S. Patent Appl. Pub. No. 20050289363 (“Tsirkel”)
9. U.S. Patent Appl. Pub. No. 2007/0033607 (“Bryan”)
10. U.S. Patent Appl. Pub. No. 2007/0244572 (“Farr”)
11. U.S. Patent Appl. Pub. No. 2005/0194456A1 (“Tessier”)
12. Multi-Agent Building Control in Shared Environment (“Qiao”)
13. TEC22x7-2 Series LonWorks® Network Thermostats with Two Outputs, Installation Instructions
14. 33CS TEMP System Unitary Controller Thermostat, Installation, Service and Troubleshooting Instructions
15. “The Neural Network House: An Overview” by Michael C. Moser, Robert H. Dodier, Marc Anderson, Lucky Vidmar, Robert F. Cruickshanks III, Debra Miller (“Moser”) published in L. Niklasson & Boden (Eds.), Current trends in connectionism (pp.371-380), 1995.
16. “Integration Of Real-Time Data Into Building Automation Systems” by Mark J. Stunder, Perry Sebastian, Brenda A Chube, Michael D. Koontz (“Stunder”) published in January 2003.

17. U.S. Patent No. 8,255,090B2 (“Frader-Thompson ‘090”)
18. U.S. Patent No. 8,031,060 (“Hoffberg ‘060”)
19. U.S. Patent No. 7,089,088 (“Terry ‘088”)
20. “Architecture for Intelligent Thermostats That Learn From Occupants Behavior” by Alex Boisvert, Ruden Gonzalez Rubio (“Boisvert”) in AIVC Published in January 1999.
21. “Comfort Control for Short-Term Occupancy” by M. Fountain, G. S. Brager, Edward A. Arens et al. (“Fountain”) in UC Berkeley Controls and Information Technology published on January 14, 1994.

Defendants additionally identify and rely on patent or publication references that describe or are otherwise related to the prior art systems identified below. Defendants' investigation into prior art patent and publication references remains ongoing, and Defendants reserve the right to identify and rely on additional patent or publication references that are identified through further investigation or discovery (including materials that may be in Plaintiff's possession and have yet to be produced). To the extent any Defendant had knowledge of a prior art reference that was not disclosed in these contentions, such knowledge is not attributed to other Defendants. Defendants reserve the right to supplement as further prior art is identified through investigation or discovery.

2. Prior Art Systems

The following systems are prior art to the '492 Asserted Claims under at least 35 U.S.C. §§ 102(a), (b) and/or (g). Invalidity claim charts for these references are attached as Exhibits A through B.

1. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the WebCTRL system (“WebCTRL”). WebCTRL qualifies as prior art under § 102 because it was either (1)

in public use or on sale in the United States no later than the priority date of the Asserted Claims or (2) reduced to practice in the United States no later than the priority date of the Asserted Claims without being abandoned, suppressed, or concealed. Defendants reserve the right to rely on other sources of evidence identified as discovery and Defendants' investigation progresses.

Defendants' investigation into prior art systems remains ongoing and Defendants reserve the right to identify and rely on systems that represent different versions or are otherwise related variations of the systems identified above.

B. INVALIDITY UNDER 35 U.S.C. § 112

Pursuant to the July 16, 2020 Scheduling Orders in their respective cases, Defendants identify below grounds of invalidity under 35 U.S.C. § 112.

1. Legal Background Regarding The Indefiniteness, Enablement, And Written Description Requirements

Section 112, ¶ 2 includes a definiteness requirement: “[T]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112, ¶ 2. “[A] patent is invalid for indefiniteness if its claims, read in light of the patent’s specification and prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.”

Nautilus, Inc. v. Biosig Instruments, Inc., 134 S. Ct. 2120, 2124 (2014).

The definiteness requirement requires that the claim must set forth what the applicant regards as the invention, and do so with sufficient particularity and definiteness. *Allen Eng’g Corp. v. Bartell Indus.*, 299 F.3d 1336, 1348 (Fed. Cir. 2002). Where it would be apparent to one of skill in the art, based on the patent specification, that the “invention” set forth in a claim is not what the patent applicant regarded as the invention, the claim is invalid. *Id.*

35 U.S.C. § 112 further includes an enablement requirement: “The specification shall contain a written description . . . of the manner and process of making and using [the invention]

in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same.” 35 U.S.C. § 112,

¶ 1. To satisfy the enablement requirement, the disclosure “must teach those skilled in the art how to make and use the full scope of the claimed invention without ‘undue experimentation.’”

Genentech, Inc. v. Novo Nordisk A/S, 108 F.3d 1361, 1366 (Fed. Cir. 1997); *MagSil Corp. v. Hitachi Glob. Storage Techs., Inc.*, 687 F.3d 1377, 1381 (Fed. Cir. 2012); *Sitrick v. Dreamworks, LLC*, 516 F.3d 993, 999 (Fed. Cir. 2008). If a specification teaches away from a substantial portion of the claim or does not enable the full scope of the claim, there is no enablement. *AK Steel Corp. v. Sollac*, 344 F.3d 1234 (Fed. Cir. 2003); *see also MagSil Corp.*, 687 F.3d at 1383-84 (Fed. Cir. 2012).

35 U.S.C. § 112 further includes a written description requirement: “The specification shall contain a written description of the invention” 35 U.S.C. § 112, ¶ 1. “To satisfy the written description requirement, a patent applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention.”

ICU Medical Inc. v. Alaris Medical Systems, Inc., 558 F.3d 1368, 1377 (Fed. Cir. 2009) (internal quotation marks and citations omitted); *see also Synthes USA, LLC v. Spinal Kinetics, Inc.*, 734 F.3d 1332, 1340 (Fed. Cir. 2013). “The test [for written description support] requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art. Based on that inquiry, the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed.” *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc).

The specification must describe the claimed invention in sufficient detail so that a

POSITA can recognize what is claimed. “The appearance of mere indistinct words in a specification or a claim, even an original claim, does not necessarily satisfy that requirement.”

Univ. of Rochester v. G.D. Searle & Co., 358 F.3d 916, 923 (Fed. Cir. 2004) (internal quotation marks and citations omitted).

2. Invalidity Grounds Under 35 U.S.C. § 112

The grounds identified below both individually and collectively render the '492 Asserted Claims invalid under the statutory requirements of § 112. By identifying certain claim language below, Defendants do not imply that such language is entitled to any patentable weight when comparing the claim as a whole to the prior art. Defendants' identifications are made based on Defendants' present understanding of the Asserted Claims and EcoFactor's apparent interpretation of these claims as reflected in its Infringement Contentions, and Defendants reserve the right to amend these identifications, including in response to claim constructions and claim interpretations that would render claim limitations not enabled, lacking in written description, or indefinite. To the extent a claim element is contained within an element identified below or encompass an element identified below, that claim element also renders the claim invalid under 35 U.S.C. § 112.

a. Lack of Enablement And Written Description Under 35 U.S.C. § 112, ¶ 1

Based on Defendants' present understanding of the Asserted Claims and EcoFactor's apparent interpretation of these claims as reflected in its Infringement Contentions, the '492 Asserted Claims may fail to satisfy the requirements of § 112, ¶ 1 because the specification and original patent application fail to provide an enabling disclosure of and written description support for at least the following limitations:

- “determining whether one or more networked electronic devices inside said

structure are in use”

- “wherein activity of one or more networked electronic devices indicates whether said thermostat should be changed from said first temperature setpoint to said second temperature setpoint”
- “said application determines whether said one or more electronic devices are in use and in response, whether said thermostat is set to said first temperature setpoint that indicates said structure is not occupied”
- “in which at least one of said networked electronic devices is a television”
- “in which at least one of said electronic devices is a game console”

b. Indefiniteness Under 35 U.S.C. § 112, ¶2

Based on Defendants’ present understanding of the Asserted Claims and EcoFactor’s apparent interpretation of these claims as reflected in its Infringement Contentions, the ’492 Asserted Claims may fail to satisfy the requirements of § 112, ¶ 2 because the precise scope of at least the terms listed below cannot be determined with reasonable certainty by a POSITA when reading the claims in light of the specification and prosecution history.

- “said first HVAC temperature setpoint indicating that said structure is deemed to be non occupied”
- “said first temperature setpoint that indicates said structure is not occupied”

VII. ’488 PATENT

A. PRIOR ART REFERENCES

Defendants identify the following prior art now known to Defendants to anticipate or render obvious the ’488 Asserted Claims under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g), and/or § 103, either expressly or inherently as understood by a POSITA.

1. Prior Art Publications

The following patents and publications are prior art to the '488 Asserted Claims under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). Invalidity claim charts for these references are attached as Exhibits A through B.

1. U.S. Patent Appl. Pub. No. 2004/0117330 (“Ehlers ’330”)
2. U.S. Patent No. 6,860,431 (“Jayadev”)
3. U.S. Patent No. 4,897,798 (“Cler”)
4. U.S. Patent No. 7,778,734 (“Oswald ’734”)
5. “The Application of Wireless Sensor Networks to Residential Energy Efficiency and Demand Response” (“Ota”)
6. U.S. Patent No. 5,729,474 (“Hildebrand”)
7. “Demand response enabling technology development” (“Arens”)
8. “Findings from the 2004 Fully Automated Demand Response Tests in Large Facilities” (“Piette”)
9. U.S. Patent No. 6,789,739 (“Rosen”)
10. U.S. Patent Appl. Pub. No. 2007/0043478 (“Ehlers ’478”)
11. U.S. Patent No. 5,197,666 (“Wedekind”)
12. U.S. Patent Appl. Pub. No. 2005/0171645 (“Oswald ’645”)
13. “Review of Load Management and Demand Response in Australia” (“Crossley”)
14. “Handbook of Heating, Ventilation, and Air Conditioning” (“Kreider”)
15. U.S. Patent No. 7,703,694 (“Mueller”)
16. “Peak Demand Limiting In New York Residential Housing: Automatic Air Conditioner Load Curtailment And Demand Limiting Using Wireless Mesh Communications” (“Harris”)

17. U.S. Patent No. 7,802,618 (“Simon”)
18. “HVAC Control in the New Millennium” (“Hordeski”)
19. International Publication No. WO 02/37332 (“Ryan”)
20. International Publication No. WO 2007/128783 (“McNulty”)
21. “ComfortChoice: Bringing Value to the Value Chain” (“El-Moslimany”)
22. U.S. Patent No. 7,216,016 (“Van Ostrand”)
23. U.S. Patent No. 7,354,005 (“Carey”)
24. “A Stochastic Computer Model for Heating and Cooling Loads” (“Mortensen”)

Defendants additionally identify and rely on patent or publication references that describe or are otherwise related to the prior art systems identified below. Defendants' investigation into prior art patent and publication references remains ongoing, and Defendants reserve the right to identify and rely on additional patent or publication references that are identified through further investigation or discovery (including materials that may be in Plaintiff's possession and have yet to be produced). To the extent any Defendant had knowledge of a prior art reference that was not disclosed in these contentions, such knowledge is not attributed to other Defendants. Defendants reserve the right to supplement as further prior art is identified through investigation or discovery.

2. Prior Art Systems

The following systems are prior art to the '488 Asserted Claims under at least 35 U.S.C. §§ 102(a), (b) and/or (g). Invalidity claim charts for these references are attached as Exhibits A through B.

1. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the WebCTRL system (“WebCTRL”). WebCTRL qualifies as prior art under § 102 because it was either (1) in public use or on sale in the United States no later than the priority date of the Asserted Claims or (2) reduced to practice in the United States no later than the

priority date of the Asserted Claims without being abandoned, suppressed, or concealed. Defendants reserve the right to rely on other sources of evidence identified as discovery and Defendants' investigation progresses.

Defendants' investigation into prior art systems remains ongoing, and Defendants reserve the right to identify and rely on systems that represent different versions or are otherwise related variations of the systems identified above.

B. INVALIDITY UNDER 35 U.S.C. § 112

Pursuant to the July 16, 2020 Scheduling Orders in their respective cases, Defendants identify below grounds of invalidity under 35 U.S.C. § 112.

1. Legal Background Regarding The Indefiniteness, Enablement, And Written Description Requirements

The legal background for the indefiniteness, enablement, and written description requirements was provided in Section VI.B.1 above for the '492 Patent and is incorporated here by reference.

2. Invalidity Grounds Under 35 U.S.C. § 112

The grounds identified below both individually and collectively render the '488 Asserted Claims invalid under the statutory requirements of § 112. By identifying certain claim language below, Defendants do not imply that such language is entitled to any patentable weight when comparing the claim as a whole to the prior art. Defendants' identifications are made based on Defendants' present understanding of the Asserted Claims and EcoFactor's apparent interpretation of these claims as reflected in its Infringement Contentions, and Defendants reserve the right to amend these identifications, including in response to claim constructions and claim interpretations that would render claim limitations not enabled, lacking in written description, or indefinite. To the extent a claim element is contained within an element identified below or encompass an element identified below, that claim element also renders the

claim invalid under 35 U.S.C. § 112.

a. Lack of Enablement And Written Description Under 35 U.S.C. § 112, ¶ 1

Based on Defendants' present understanding of the Asserted Claims and EcoFactor's apparent interpretation of these claims as reflected in its Infringement Contentions, the '488 Asserted Claims may fail to satisfy the requirements of § 112, ¶ 1 because the specification and original patent application fail to provide an enabling disclosure of and written description support for at least the following limitations:

- “estimation”
- “derive an estimation”
- “compare an inside temperature recorded inside the first structure with said estimation for the rate of change in inside temperature of said first structure to determine whether the first HVAC system is on or off”
- “said estimation is a prediction about the future rate of change in temperature inside said structure”
- “in which said processors communicate with said HVAC system using a network that includes an electricity meter”

b. Indefiniteness Under 35 U.S.C. § 112, ¶2

Based on Defendants' present understanding of the Asserted Claims and EcoFactor's apparent interpretation of these claims as reflected in its Infringement Contentions, the '488 Asserted Claims may fail to satisfy the requirements of § 112, ¶ 2 because the precise scope of at least the terms listed below cannot be determined with reasonable certainty by a POSITA when reading the claims in light of the specification and prosecution history.

- “estimation”

- “HVAC control system”

VIII. '327 PATENT

A. PRIOR ART REFERENCES

Defendants identify the following prior art now known to Defendants to anticipate or render obvious the '327 Asserted Claims under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g), and/or § 103, either expressly or inherently as understood by a POSITA.

1. Prior Art Publications

The following patents and publications are prior art to the '327 Asserted Claims under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). Invalidity claim charts for these references are attached as Exhibits A through B.

1. U.S. Patent Appl. Pub. No. 2004/0117330 (“Ehlers '330”)
2. U.S. Patent Appl. Pub. No. 2005/0171645 (“Oswald '645”)
3. “Demand response enabling technology development” (“Arens”)
4. “The Application of Wireless Sensor Networks to Residential Energy Efficiency and Demand Response” (“Ota”)
5. U.S. Patent No. 6,480,803 (“Pierett”)
6. U.S. Patent No. 4,897,798 (“Cler”)
7. U.S. Patent No. 5,729,474 (“Hildebrand”)
8. U.S. Patent No. 6,789,739 (“Rosen”)
9. International Publication No. WO 02/37332 (“Ryan”)
10. International Publication No. WO 2007/128783 (“McNulty”)
11. U.S. Patent No. 7,778,734 (“Oswald '734”)
12. “Findings from the 2004 Fully Automated Demand Response Tests in Large Facilities” (“Piette”)

13. “HVAC Control in the New Millennium” (“Hordeski”)
14. “Review of Load Management and Demand Response in Australia” (“Crossley”)
15. “ComfortChoice: Bringing Value to the Value Chain” (“El-Moslimany”)
16. California Energy Commission Enhanced Automation Technical Options Guidebook (“California Energy Commission”)
17. U.S. Patent No. 7,802,618 (“Simon”)
18. “Handbook of Heating, Ventilation, and Air Conditioning” (“Kreider”)
19. U.S. Patent No. 7,703,694 (“Mueller”)
20. “Peak Demand Limiting In New York Residential Housing: Automatic Air Conditioner Load Curtailment And Demand Limiting Using Wireless Mesh Communications” (“Harris”)
21. U.S. Patent No. 5,197,666 (“Wedekind”)
22. U.S. Patent No. 6,216,956 (“Ehlers ’956”)
23. U.S. Patent No. 8,095,233 (“Shankar”)

Defendants additionally identify and rely on patent or publication references that describe or are otherwise related to the prior art systems identified below. Defendants' investigation into prior art patent and publication references remains ongoing, and Defendants reserve the right to identify and rely on additional patent or publication references that are identified through further investigation or discovery (including materials that may be in Plaintiff's possession and have yet to be produced). To the extent any Defendant had knowledge of a prior art reference that was not disclosed in these contentions, such knowledge is not attributed to other Defendants. Defendants reserve the right to supplement as further prior art is identified through investigation or discovery.

2. Prior Art Systems

The following systems are prior art to the '327 Asserted Claims under at least 35 U.S.C. §§ 102(a), (b) and/or (g). Invalidity claim charts for these references are attached as Exhibits A through B.

1. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the WebCTRL system ("WebCTRL"). WebCTRL qualifies as prior art under § 102 because it was either (1) in public use or on sale in the United States no later than the priority date of the Asserted Claims or (2) reduced to practice in the United States no later than the priority date of the Asserted Claims without being abandoned, suppressed, or concealed. Defendants reserve the right to rely on other sources of evidence identified as discovery and Defendants' investigation progresses.

Defendants' investigation into prior art systems remains ongoing and Defendants reserve the right to identify and rely on systems that represent different versions or are otherwise related variations of the systems identified above.

B. INVALIDITY UNDER 35 U.S.C. § 112

Pursuant to the July 16, 2020 Scheduling Orders in their respective cases, Defendants identify below grounds of invalidity under 35 U.S.C. § 112.

1. Legal Background Regarding The Indefiniteness, Enablement, And Written Description Requirements

The legal background for the indefiniteness, enablement, and written description requirements was provided in Section VI.B.1 above for the '327 patent and is incorporated here by reference.

2. Invalidity Grounds Under 35 U.S.C. § 112

The grounds identified below both individually and collectively render the '327 Asserted Claims invalid under the statutory requirements of § 112. By identifying certain claim language below, Defendants do not imply that such language is entitled to any patentable weight when comparing the claim as a whole to the prior art. Defendants' identifications are made based on

Defendants' present understanding of the Asserted Claims and EcoFactor's apparent interpretation of these claims as reflected in its Infringement Contentions, and Defendants reserve the right to amend these identifications, including in response to claim constructions and claim interpretations that would render claim limitations not enabled, lacking in written description, or indefinite. To the extent a claim element is contained within an element identified below or encompass an element identified below, that claim element also renders the claim invalid under 35 U.S.C. § 112.

a. Lack of Enablement And Written Description Under 35 U.S.C. § 112, ¶ 1

Based on Defendants' present understanding of the Asserted Claims and EcoFactor's apparent interpretation of these claims as reflected in its Infringement Contentions, the '327 Asserted Claims may fail to satisfy the requirements of § 112, ¶ 1 because the specification and original patent application fail to provide an enabling disclosure of and written description support for at least the following limitations:

- “configured to receive a demand reduction request and determine whether the structure is associated with demand rejection request”
- “receiving a demand reduction request and determining whether the structure is associated with demand rejection request”
- “based on the determination that the structure is associated with the demand reduction request”

b. Indefiniteness Under 35 U.S.C. § 112, ¶ 2

Based on Defendants' present understanding of the Asserted Claims and EcoFactor's apparent interpretation of these claims as reflected in its Infringement Contentions, the '327 Asserted Claims may fail to satisfy the requirements of § 112, ¶ 2 because the precise scope of at

least the terms listed below cannot be determined with reasonable certainty by a POSITA when reading the claims in light of the specification and prosecution history.

- “configured to receive a demand reduction request and determine whether the structure is associated with demand rejection request”
- “receiving a demand reduction request and determining whether the structure is associated with demand rejection request”
- “based on the determination that the structure is associated with the demand reduction request”
- “receiving temperature measurements inside a structure from at least one thermostat, the structure conditioned by at least one HVAC system, the thermostat having at least a first setting stored therein”
- “be setting”

VIII. '382 PATENT

A. PRIOR ART REFERENCES

Defendants identify the following prior art now known to Defendants to anticipate or render obvious the '382 Asserted Claims under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g), and/or § 103, either expressly or inherently as understood by a POSITA.

1. Prior Art Publications

The following patents and publications are prior art to the '382 Asserted Claims under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). Invalidity claim charts for these references are attached as Exhibits A through B.

1. “Demand response enabling technology development” (“Arens”)
2. U.S. Patent Appl. Pub. No. 2004/0117330 (“Ehlers '330”)

3. U.S. Patent Appl. Pub. No. 2005/0171645 (“Oswald ’645”)
4. U.S. Patent No. 7,778,734 (“Oswald ’734”)
5. U.S. Patent Appl. Pub. No. 2009/0302994A1 (“Rhee”)
6. U.S. Patent No. 8,196,185 (“Gadelmann”)
7. U.S. Patent No. 8,095,233 (“Shankar”)
8. U.S. 8,063,775 (“Reed”)
9. U.S. Patent Appl. Pub. No. 2015/0159901A1 (“Quam”)
10. U.S. Patent No. 6,324,008 (“Baldwin”)
11. U.S. Patent Appl. Pub. No. 2003/0050737A1 (“Osann”)
12. U.S. Patent No. 9,823,672 (“McCurnin”)

Defendants additionally identify and rely on patent or publication references that describe or are otherwise related to the prior art systems identified below. Defendants’ investigation into prior art patent and publication references remains ongoing, and Defendants reserve the right to identify and rely on additional patent or publication references that are identified through further investigation or discovery (including materials that may be in Plaintiff’s possession and have yet to be produced). To the extent any Defendant had knowledge of a prior art reference that was not disclosed in these contentions, such knowledge is not attributed to other Defendants. Defendants reserve the right to supplement as further prior art is identified through investigation or discovery.

2. Prior Art Systems

The following systems are prior art to the ’382 Asserted Claims under at least 35 U.S.C. §§ 102(a), (b) and/or (g). Invalidity claim charts for these references are attached as Exhibits A through B.

1. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the WebCTRL system (“WebCTRL”). WebCTRL qualifies as prior art under § 102 because it was either (1) in public use or on sale in the United States no later than the priority date of the Asserted Claims or (2) reduced to practice in the United States no later than the priority date of the Asserted Claims without being abandoned, suppressed, or concealed. Defendants reserve the right to rely on other sources of evidence identified as discovery and Defendants’ investigation progresses.

Defendants’ investigation into prior art systems remains ongoing and Defendants reserve the right to identify and rely on systems that represent different versions or are otherwise related variations of the systems identified above.

B. INVALIDITY UNDER 35 U.S.C. § 112

Pursuant to the July 16, 2020 Scheduling Orders in their respective cases, Defendants identify below grounds of invalidity under 35 U.S.C. § 112.

1. Legal Background Regarding The Indefiniteness, Enablement, And Written Description Requirements

The legal background for the indefiniteness, enablement, and written description requirements was provided in Section VI.B.1 above for the ’492 Patent and is incorporated here by reference.

2. Invalidity Grounds Under 35 U.S.C. § 112

The grounds identified below both individually and collectively render the ’382 Asserted Claims invalid under the statutory requirements of § 112. By identifying certain claim language below, Defendants do not imply that such language is entitled to any patentable weight when comparing the claim as a whole to the prior art. Defendants’ identifications are made based on Defendants’ present understanding of the Asserted Claims and EcoFactor’s apparent interpretation of these claims as reflected in its Infringement Contentions, and Defendants reserve the right to amend these identifications, including in response to claim constructions and claim interpretations that would render claim limitations not enabled, lacking in written

description, or indefinite. To the extent a claim element is contained within an element identified below or encompass an element identified below, that claim element also renders the claim invalid under 35 U.S.C. § 112.

a. Lack of Enablement And Written Description Under 35 U.S.C. § 112, ¶ 1

Based on Defendants' present understanding of the Asserted Claims and EcoFactor's apparent interpretation of these claims as reflected in its Infringement Contentions, the '382 Asserted Claims may fail to satisfy the requirements of § 112, ¶ 1 because the specification and original patent application fail to provide an enabling disclosure of and written description support for at least the following limitations:

- “the one or more processors with circuitry and code designed to execute instructions to receive a second data from a network connection, wherein the second data from the network connection is collected from a source external to the building, wherein the second data from the network connection is received via the Internet”
- “wherein the one or more processors comprises a first processor with circuitry and code designed to execute instructions, which is located remotely from the memory and is not electrically connected to the memory”
- “wherein the memory is configured to store historical values of the first data and second data”
- “wherein the second data from the network connection comprises a measurement of the current outdoor temperature”
- “wherein the determination of whether the building is occupied or unoccupied by the one or more processors is based on a third data received from a motion sensor”

- “wherein the network connection is based on the IEEE 802.11 wireless protocol”
- “wherein the first data from the at least one sensor is provided by a sensor that is not electrically connected to the first processor”
- “wherein the interface is configured to allow the user to input that the building is currently unoccupied”
- “the one or more processors with circuitry and code designed to execute instructions to receive a third data from a motion sensor, and is further configured to determine whether the building is occupied or unoccupied based at least in part on the third data”
- “wherein the one or more processors with circuitry and code designed to execute instructions controls the HVAC system to provide heating or cooling to the building at an operational temperature based at least in part on the historical values of the first and second data”

b. Indefiniteness Under 35 U.S.C. § 112, ¶2

Based on Defendants’ present understanding of the Asserted Claims and EcoFactor’s apparent interpretation of these claims as reflected in its Infringement Contentions, the ’492 Asserted Claims may fail to satisfy the requirements of § 112, ¶2 because the precise scope of at least the terms listed below cannot be determined with reasonable certainty by a POSITA when reading the claims in light of the specification and prosecution history.

- “a first processor . . . which is located remotely from the memory”
- “a first processor . . . which . . . is not electrically connected to the memory”
- “a sensor that is not electrically connected to the first processor”

IX. DOCUMENT PRODUCTION ACCOMPANYING FINAL INVALIDITY CONTENTIONS

Defendants are producing and/or making available for inspection documents required under the July 16, 2020 Scheduling Orders under separate cover.

Defendants reserve the right to produce and rely on additional documents relating to their products in view of, for example, additional information revealed during discovery regarding EcoFactor's allegations and/or amendments to EcoFactor's Infringement Contentions.

X. OTHER RESERVATIONS AND EXPLANATIONS

These Final Invalidity Contentions and accompanying document productions are subject to further revision as follows. Nothing in these contentions constitutes an admission concerning the priority date, conception date, or date of reduction to practice of the Asserted Claims.

Defendants reserve the right to modify or supplement these Final Invalidity Contentions, including in response to any positions taken or information disclosed regarding the priority date, conception date, or date of reduction to practice of the Asserted Claims.

For prior art patents and prior art publications identified in these Final Invalidity Contentions, Defendants reserve the right to rely on the public use, offer for sale, sale, and/or actual products embodying the methods and systems described therein uncovered during discovery. Defendants also reserve the right to rely on any related patents and patent applications, foreign patent counterparts and foreign patent applications of U.S. patents identified in these Final Invalidity Contentions, and U.S. counterparts of foreign patents and foreign patent applications identified in these Final Invalidity Contentions.

The Court has not yet issued a claim construction order for any of the terms in the Asserted Patents. Accordingly, Defendants' Final Invalidity Contentions are based in part on Defendants' present understanding of the Asserted Claims and EcoFactor's apparent

interpretation of these claims as reflected in its Infringement Contentions. By including prior art that anticipates or renders obvious claims based on EcoFactor's apparent claim interpretations, Defendants are not agreeing that EcoFactor's claim interpretations are correct.

The accompanying invalidity claim charts provide examples of prior art that discloses, either expressly or inherently, every limitation of certain claims and/or teachings, suggestions, and motivations through which a POSITA at the time of the alleged invention would have considered the limitations obvious in view of the state of the art at the time, the differences between the claimed invention and the state of the art, and the foreseeability from a technical perspective and/or marketing and/or natural and expected evolution of the art. Where Defendants cite to a particular figure in a reference, the citation should be understood to encompass the caption and description of the figure and any text relating to the figure. Conversely, where Defendants cite to particular text referring to a figure, the citation should be understood to include the figure as well. As discovery progresses and the scope and focus of the liability issues become clearer, Defendants may rely on uncited portions of the prior art.

Defendants reserve the right to revise their ultimate contentions concerning the invalidity of the Asserted Claims, which may change depending on discovery taken in the case, the Court's construction of the Asserted Claims, any findings as to the priority date of the Asserted Claims, and/or positions that EcoFactor or expert witness(es) may take concerning claim construction, infringement, and/or invalidity issues.

Defendants may rely on EcoFactor's or any inventor's admissions concerning the scope of prior art relevant to the Asserted Patents; the patent prosecution histories for the Asserted Patents; any deposition testimony of the named inventors on the Asserted Patents; and the papers filed and any evidence submitted by EcoFactor in connection with this litigation. For example,

Defendants reserve the right to assert that the Asserted Claims are invalid under 35 U.S.C. § 102(f) in the event that Defendants obtain evidence that the named inventors did not invent (either alone or in conjunction with others) the subject matter claimed in the Asserted Patents. Should Defendants obtain such evidence, they will provide the name(s) of the person(s) from whom and the circumstances under which the claimed invention or any part of it was derived.

Prior art not included in this disclosure, whether known or not known to Defendants, may become relevant. In particular, Defendants are currently unaware of the extent, if any, to which EcoFactor will contend that limitations of the Asserted Patents are not disclosed in the prior art identified by Defendants. To the extent such an issue arises, Defendants reserve the right to identify other references that would render obvious the allegedly missing limitation(s) of the disclosed device or method. Further, because discovery has only recently begun and because Defendants have not yet completed their search for or analysis of relevant prior art, Defendants reserve the right to revise, amend, and/or supplement the information provided herein, including identifying, charting, and relying on additional references, should Defendants' further search and analysis yield additional information or references, consistent with the Federal Rules of Civil Procedure.

Additionally, because third-party discovery is not yet complete, Defendants reserve the right to present additional items of prior art under 35 U.S.C. §§ 102(a), (b), (e), and/or (g), and/or § 103, located during the course of such discovery or further investigation, and to assert invalidity under 35 U.S.C. §§ 102(c), (d), or (f), to the extent that such discovery or investigation yields information forming the basis for such invalidity. For example, Defendants expect to issue subpoenas to, and receive information from, third parties believed to have knowledge, documentation, and/or corroborating evidence concerning some of the prior art listed below

and/or additional prior art. These third parties include, without limitation, the authors, inventors, vendors, or assignees of the references listed in these disclosures.

Defendants further reserve the right to modify or add additional contentions in the event that EcoFactor provides amended infringement contentions and to the extent the Court orders or allows EcoFactor to amend its infringement contentions.

Pursuant to the July 16, 2020 Scheduling Orders, and in light of EcoFactor's Infringement Contentions and accompanying claim chart, Defendants list in these Final Invalidity Contentions the prior art now known to them that they contend anticipates or renders obvious the Asserted Claims. Although Defendants have identified at least one disclosure of a limitation for each prior art reference, each and every disclosure of the same limitation in the same reference is not necessarily identified. In an effort to focus the issues, Defendants' citations are only representative portions of an identified reference, even where a reference may contain additional support for a particular claim limitation. POSITAs generally read an item of prior art as a whole and in the context of other publications and literature. Thus, to understand and interpret any specific statement or disclosure within a prior art reference, such persons would rely on other information within the reference, along with other publications and their general scientific knowledge. Defendants may rely on uncited portions of the prior art references and on other publications and expert testimony to provide context, and as aids to understanding and interpreting the portions that are cited.

Defendants incorporate in these Final Invalidity Contentions, in full, all prior art references cited in the Asserted Patents and their prosecution histories and any applicable post-grant proceedings, including any proceedings at the Patent Trial and Appeal Board (currently pending or otherwise).

Subject to Defendants' reservation of rights, Defendants identify each item of prior art that anticipates and/or renders obvious the Asserted Claims. The patents/applications, publications, and systems identified are also relevant to show the state of the art and reasons and motivations for making improvements, additions, and combinations.

Defendants also contend that the Asserted Patents are invalid in view of public knowledge and uses and/or offers for sale or sales of products and services that are under 35 U.S.C. § 102(a) and/or 35 U.S.C. § 102(b) and/or prior inventions made in this country by other inventors who had not abandoned, suppressed, or concealed them under 35 U.S.C. § 102(g).

Defendants also reserve the right to rely on any system, public knowledge or use embodying or otherwise incorporating any of the prior art disclosed herein alone or in combination. Defendants further reserve the right to rely on any other documents or references describing any such system, knowledge, or use.

Date: February 3, 2021

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that on February 3, 2021, the foregoing was served on all counsel of record by e-mail.

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